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SKIMMER

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(57) Claim

1. A pool skimmer device comprising at least two support arms, pontoons or hulls having paddle means attached therebetween, said paddle means being operatively connected to drive means such that motion of the paddle means due to the operation of the drive means tends to draw debris, floating on or near the surface of a pool in which the device is operating into the device and subsequently into the filtration system of the pool.

2. A device as claimed in Claim 1 in which the drive means comprises an electrically driven motor or a jet of water, directed on to the paddle wheel from the filtration system of the pool.

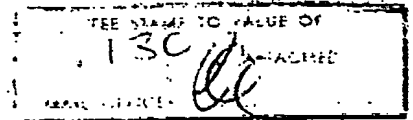
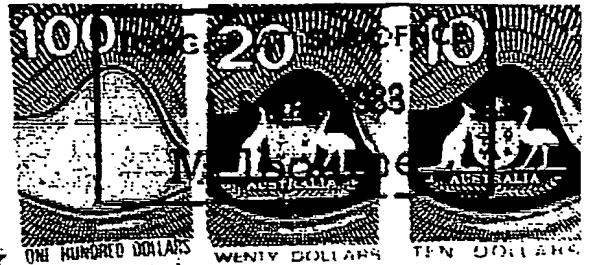
3. A device as claimed in Claim 1 or 2 which is mounted in close proximity to the skimmer box of a pool in such a manner as to enable the skimmer device to adjust to varying water levels in the pool.

COMMONWEALTH OF AUSTRALIA

PATENTS ACT 1952-69

COMPLETE SPECIFICATION

(ORIGINAL)



Class

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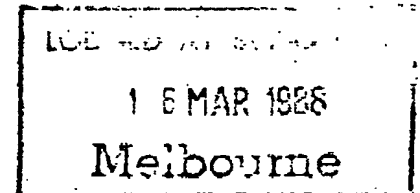
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Complete Specification for the invention entitled:

SKIMMER

The following statement is a full description of this invention, including the best method of performing it known to me:

SKIMMER

This invention relates to a device for removing floating material from the surface of a body of water and relates particularly but not exclusively to a device for removing unwanted material or debris such as leaves,
5 insects, grass, paper etc. from the surface of a swimming pool.

Floating debris is currently removed from the surface of a swimming pool by way of a hand held net or by
10 way of a skimmer device associated with the filtration system of the pool. It is impractical for a hand held device to be utilised twenty-four hours a day and the skimmer device associated with the filtration system of the pool is also unsatisfactory as in both cases floating debris
15 may become water-logged and sink below the surface or to the bottom of the pool prior to reaching the pool skimmer or prior to being manually removed by way of a hand held net. The water-logged material, particularly such material in the form of leaves and the like is often difficult to remove
20 from the pool by conventional means once it has become water-logged and settled to the bottom of the pool.

It is therefore an object of the invention to provide a pool skimmer device which removes floating debris from a swimming pool or the like in a more efficient manner
25 than known devices.

The present invention therefore provides in one form a pool skimmer device comprising at least two support arms, pontoons or hulls having paddle means attached
therebetween, said paddle means being operatively connected
30 to drive means such that motion of the paddle means due to the operation of the drive means tends to draw debris, floating on or near the surface of a pool in which the device is operating into the device and subsequently into the filtration system of the pool.

35 Preferably the drive means comprises an electrically driven motor or a jet of water, directed on to the paddle wheel from the filtration system of the pool. The pool skimmer device is preferably mounted in close

proximity to the skimmer box of a pool in such a manner as to enable the skimmer device to adjust to varying water levels in the pool.

5 The present invention also provides in another form a free floating pool skimmer device comprising at least two floating pontoons or hulls having paddle means attached therebetween, said paddle means being operatively connected to drive means such that the motion of the paddle means due to the operation of the drive means tends to draw debris, 10 floating on or near the surface of a pool in which the device is operating into the device and retained between the pontoons and a debris collecting net attached to the pontoons. Preferably the drive means comprises an electric motor operatively connected to the paddle. Preferably the 15 electric motor is driven by power obtained from a solar power collecting panel or panels mounted on the device.

Preferably the device includes storage means to store excess energy produced by the solar collecting panel. Preferably the device includes a rudder or rudders to cause 20 the device to be driven in a circular manner. Preferably the device includes a fender or fenders to deflect the device away from obstacles such as the walls of the pool or other pool fittings. Preferably the debris collecting net or nets are releasably fixed to the device to facilitate 25 ease of cleaning of the device. Preferably the device additionally includes a decorative cowl or cowls in the form of a paddle steamer superstructure, a tortoise, a duck, a shark or the like.

30 In order that the invention may be more readily understood, one preferred form of the invention will now be described with reference to the accompanying drawings in which :-

Figure 1 is a schematic plan view of a device constructed in accordance with the invention;

35 Figure 2 is a side elevation of the device of Figure 1;

Figure 3 is a front elevation of the device of Figure 1;

Referring to Figures 1, 2 and 3, there is shown a skimmer device 10 comprising a pair of pontoons or hull members 11 suitably mounted to spars or spacer members 13 to provide a "catamaran" type configuration having a bow end 12 and a stern end 14. The hulls 11 are appropriately dimensioned at bow end 13 to provide bows 15. Mounted on the device towards the stern 14 is a solar panel array 16 comprising a plurality of solar panels 17. Mounted on amidships spar 12b is an electric motor 18 connected by belt 19 to paddle wheels 20. The motor 18 is electrically connected by conductors (not shown) to the solar panel array 16 such that electricity generated by the array drives the motor 18 which causes the paddle wheels 20 to rotate about paddle axis 21 which is mounted by suitable bearings 22 on the foredeck 23a of the device. Spars 12a and 12c are mounted on the deck 23 of the device and fore-spar 12a is mounted underneath the hulls and at or below waterline 24. The forespar 12a is releasably mounted and adapted to hold between itself and the hulls, a mesh 25 of suitable dimension to hold debris floating on a pool. The mesh extends from the forespar 12a between the hulls 11 to the stern 14 of the device where it is releasably attached to the stern by means of clips or other suitable means (not shown). The mesh is wrapped around the stern of the device and extends upwardly to above the water line 24. As the device is propelled forward by the motor and paddles, debris is directed into the substantially U-shaped "catchment" area 30 formed by the hulls and the mesh across the stern of the device. Floating debris is thus collected by and retained in the device and can readily be removed and the mesh cleaned by unclipping the mesh and hosing clean with a jet of water or by other suitable means.

In this preferred form of the device, the device is powered by the solar array and no external power is required. The device will clear debris from the pool as long as there is sufficient sunlight or sunlight energy impinging on the solar array.

The device 10 preferably includes rudders 26 which may be appropriately set to cause the device to be propelled in a generally circular motion around and around the pool to cover as much of the surface area of the pool as is possible. This circular motion caused by the rudders together with water currents in the pool resulting from the filtration system and from air currents above the pool results in the device moving about the pool in random, generally circular loops to cover as much of the pool surface, as possible, in a random manner.

In order to reduce the likelihood of the device from becoming "wedged" or "trapped" in the corner of a pool it is preferable that a fender 27 be fitted which projects from bow to bow above or below (but not close to) the waterline 24 to deflect the device when a wall or other pool obstruction is encountered.

The device as described above will continue to move or "circulate" around the pool as long as there is sufficient sunlight to power the motor. If it is desired to prolong the usefulness of the device it is possible to include a bank of rechargeable batteries 28 suitably connected via conductors (not shown) into the solar panel array - motor circuit such that when solar energy in excess of that required to power the motor 18 is available, a diode switch means in the circuit diverts excess energy to the rechargeable batteries 28. When the solar energy available is no longer sufficient to power the motor 18 (i.e. after dark), the device may be powered from some additional time by utilizing the energy stored in the rechargeable batteries 28. When this energy is expended, the device will cease functioning until sufficient solar energy is able to be collected by the solar panel array 16. The device includes preferably in the battery/motor/solar panel circuit a switch to enable manual breaking of the circuit when it is desired to hand the device for cleaning.

It is preferable that the blades 29 of the paddle wheels 20, when the device is inactive (i.e. not operating due to lack of power) in the pool are of sufficient

dimensions as to form a "gate" across the open bow end of the device to reduce the likelihood of collected floating debris floating from the device when it is inactive.

5 The device as described as above with the paddle wheels at the bow end of the device is particularly preferred as the action of the paddle wheels in addition to propelling the device, tend to draw or scoop floating debris into the catchment area 30.

10 As will be best seen from Figures 2 and 3, the solar panel array 16 may be mounted, by means of suitable frame members 31, 32 or supports 31, 32 above the decking level of the device to obtain maximum exposure of the solar panels 17 to the solar radiation.

15 The device may be manufactured from any suitable materials for example the hulls may be of timber or hollow plastics material construction. The spars, rudders, and frame members may also be of timber or suitable plastics material. The mesh may also be of any suitable material and is preferably a synthetic plastics material mesh. The mesh
20 size may be any suitable size having regard to the minimum sized debris reserved to be collected by the device and having regard to the power of the motor and energy output of the solar panel array.

25 The device, for novelty purposes may include cowls or coverings which may be attached to a device as previously described for the purposes of decoration or for novelty effect. The cowls must either incorporate the solar display panels within or on the surface of the cowl or include "solar windows" to permit access of solar energy to the
30 solar panels within the device and cowl combination. The decorative cowls or covers must, as will be obvious, include an orifice to allow the floating debris, intended to be collected by the combination to be collected in the space provided. The cowls or covers may take the form of marine
35 vessels such as a ship, steamboat, paddle steamer or submarine or may take the form of some aquatic animal such as a whale, shark or tortoise.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A pool skimmer device comprising at least two support arms, pontoons or hulls having paddle means attached therebetween, said paddle means being operatively connected to drive means such that motion of the paddle means due to the operation of the drive means tends to draw debris, floating on or near the surface of a pool in which the device is operating into the device and subsequently into the filtration system of the pool.
2. A device as claimed in Claim 1 in which the drive means comprises an electrically driven motor or a jet of water, directed on to the paddle wheel from the filtration system of the pool.
3. A device as claimed in Claim 1 or 2 which is mounted in close proximity to the skimmer box of a pool in such a manner as to enable the skimmer device to adjust to varying water levels in the pool.
4. A free floating pool skimmer device comprising at least two floating pontoons or hulls having paddle means attached therebetween, said paddle means being operatively connected to drive means such that the motion of the paddle means due to the operation of the drive means tends to draw debris, floating on or near the surface of a pool in which the device is operating into the device and retained between the pontoons and a debris collecting net attached to the pontoons.
5. A device as claimed in Claim 4 in which the drive means comprises an electric motor operatively connected to the paddle.
6. A device as claimed in Claim 4 or 5 in which the electric motor is driven by power obtained from a solar power collecting panel or panels mounted on the device.

7. A device as claimed in Claim 4, 5 or 6 which includes storage means to store excess energy produced by the solar collecting panel.
8. A device as claimed in any one of Claims 4 to 7 which includes a rudder or rudders to cause the device to be driven in a circular manner and/or a fender or fenders to deflect the device away from obstacles such as the walls of the pool or other pool fittings.
9. A device as claimed in any one of Claims 4 to 8.
10. A pool skimmer device substantially as hereinbefore described with reference to the accompanying drawings.

DATED THIS 7TH DAY OF MARCH, 1988

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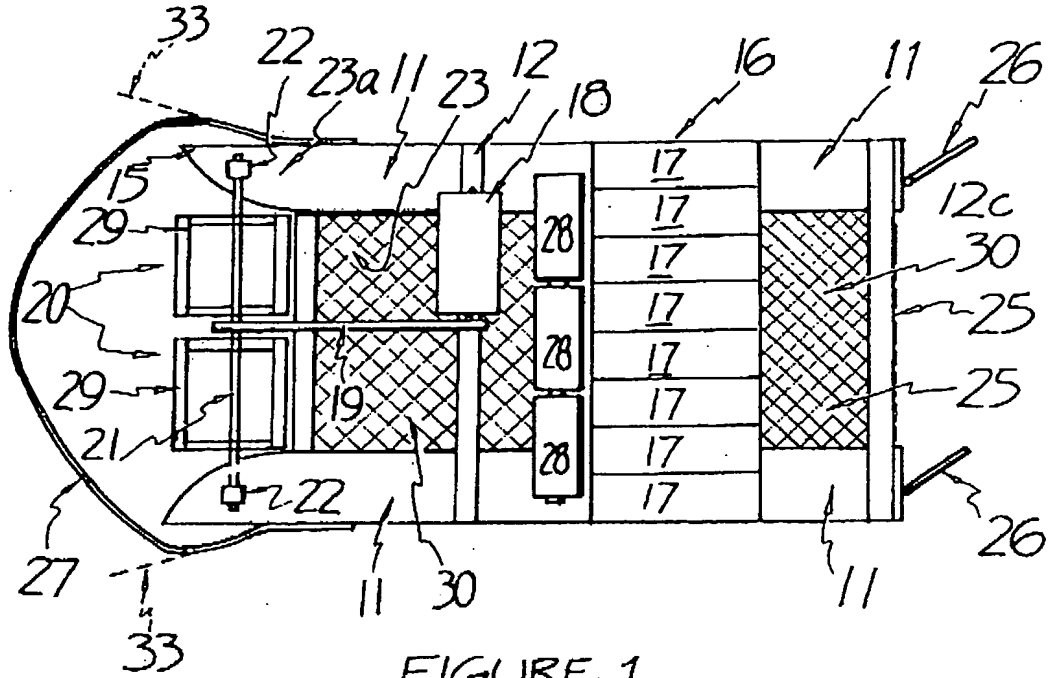


FIGURE.1

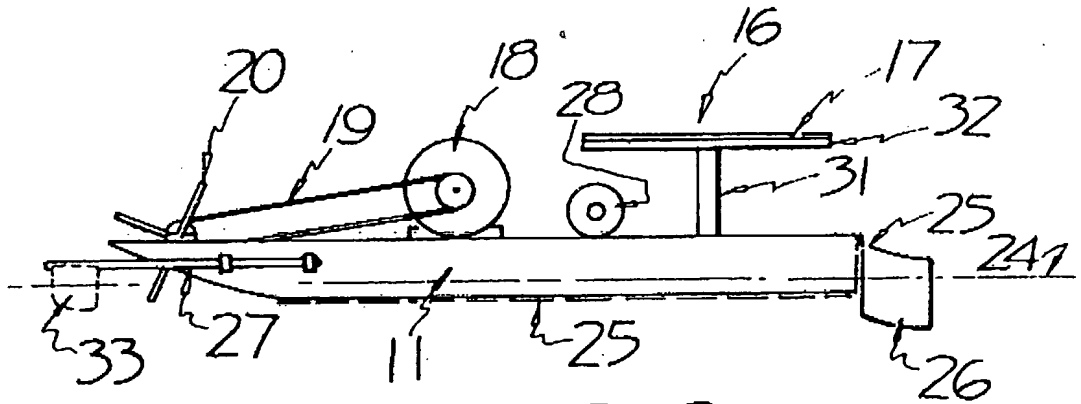
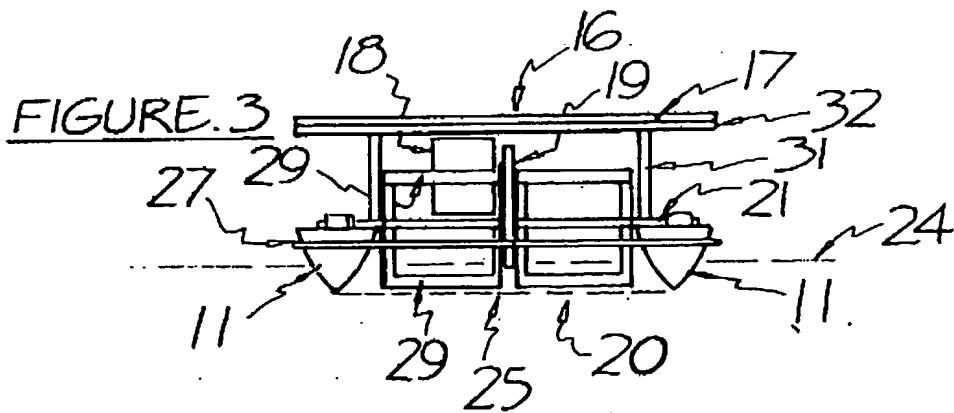


FIGURE. 2



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